AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Original): An implant for implantation in human or animal bone tissue or in bone tissue supplemented with bone substitute material, wherein at least a part of the implant surface comes into contact with the bone tissue, wherein said part of the implant surface comprises surface regions (4) of a first type and surface regions (8) of a second type being different from the surface regions (4) of the first type, wherein the surface regions (8) of the second type comprise a material which is liquefiable by mechanical oscillation and with the aid of which on implantation by mechanical oscillation the implant is stabilized at least primariliy in the bone tissue, wherein the surface regions (8) of the first type are equipped for a further clinical function being different from the function of primary stabilization and wherein the surface regions (4, 8) of the first type and of the second type are dimensioned and arranged in a manner such that the surface regions of the first type remain at least partly free from liquefied material on implantation by mechanical oscillation.

Claim 2 (Original): The implant according to claim 1, wherein the clinical function of the surface regions (4) of the first type, which function is different from primary stabilization, comprises osseointegration, permeation of particles or molecules out of the implant into bone tissue surrounding the implant or out of bone tissue surrounding the implant into the implant or electric or chemical stimulation.

Claim 3 (Original): The implant according to claim 1, wherein the liquefiable material is a material with thermoplastic properties or with thixotropic properties.

Claim 4 (Original): The implant according to claim 3, wherein the liquefiable material is a polymer based on lactic acid and/or glycolic acid, a polyhydroxy alkanoate, a polycaprolactone, a polysacharide, a polypeptide, a polydioxanone, a polyanhydride, a polyolefin, a polyacrylate, a polymetacrylate, a polycarbonate, a polyamide, a polyester, a polyurethane, a polysulphone, a polyarylketone, a polyimide, a polyphenyl sulphide, a liquid crystal polymer, a polyacetal, a halogenated polmer, in particular a halogenated polyolefin, a polyphenylene sulphide, a polysulphone, or a polyether or a copolymer or blended polymer of the said polymers or a composite material containing one of said polymers, or a polymeric, ceramic or hydraulic cement.

Claim 5 (Original): The implant according to claim 1, wherein the surface regions (4) of the first type comprise structures suitable for being ingrown or grown through by vital bone tissue.

Claim 6 (Original): The implant according to claim 5, wherein the surface regions (4) of the first type further have inflammation-inhibiting, infection-combating and/or growth-promoting properties.

Claim 7 (Original): The implant according to claim 1, wherein the surface

regions (4, 8) of the first and of the second type are arranged beside each other and in parallel to an implantation direction (A).

Claim 8 (Original): The implant according to claim 1, comprising a central implant part (1) constituting the surface regions (4) of the first type and a peripheral implant part (2) being arranged on the outside of the central implant part, consisting at least partly of the liquefiable material and constituting the surface regions (8) of the second type.

Claim 9 (Original): The implant according to claim 8, wherein the surface regions (8) of the second type protrude at least locally over the surface regions (4) of the first type.

Claim 10 (Original): The implant according claim 1, comprising a central implant part (1) constituting the surface regions (4) of the first type and comprising an inner space (2') in which the liquefiable material is arranged or arrangeable, wherein the inner space (2') is connected to the outside of the central implant part (1) by openings (20) which are dimensioned for pressing the liquefiable material when liquid through and which are arranged in an area in which the surface regions (8) of the second type are to be produced.

Claim 11 (Original): The implant according to claim 7, wherein the implant has a load bearing function and the central implant part (1) constitutes the load bearing element of the implant.

Claim 12 (Original): The implant according to claim 11, wherein the central implant part (1) consists at least partly of a metal, a metal alloy, a ceramic material, a polymer or a composite material.

Claim 13 (Original): The implant according to claim 11, wherein the central implant part (1) comprises selfcutting or grooving elements.

Claim 14 (Original): The implant according to claim 11, wherein the central implant part (1) comprises a load bearing part (1.1) and a body part (1.2) having a variable shape.

Claim 15 (Original): The implant according to claim 11, wherein the central implant part (1) comprises a load bearing support (1.3) and a body (1.4).

Claim 16 (Original): The implant according to claim 15, wherein body (1.4) comprises a bone substitute material, bone chips or a gel.

Claim 17 (Original): The implant according to claim 8, wherein the peripheral implant part (2) is equipped for being a load bearing implant part.

Claim 18 (Original): The implant according to claim 17, wherein the central implant part (1) is a container having permeable walls or consists of a bone substitute material, of bone chips or of a gel.

Claim 19 (Original): The implant according to claim 1, being a dental implant and comprising at least one fixing location (3) or at least one crown part.

Claim 20 (Original): The implant according to claim 1, being equipped for an orthopedic application.

Claim 21 (Previously Presented): The implant according to claim 19, being pin-shaped, plate-shaped, disk-shaped or blade-shaped or having a shape being adapted or adaptable to the shape of a predetermined cavity in a bone.

Claim 22 (Original): The implant according to claim 20, being equipped for connecting two bone parts or for fixing a support plate or for serving as a shaft of a prosthesis for a hip joint, finger joint, knee joint, or shoulder joint.

Claim 23 (Original): The implant according to claim 1, having the shape of a spinal disk and comprising on its lower and upper side at least one ridge (40), wherein the surface regions (8) of the second type are arranged in the area of the ridges (40).

Claim 24 (Previously Presented): The implant according to claim 20, being pin-shaped, plate-shaped, disk-shaped or blade-shaped or having a shape being adapted or adaptable to the shape of a predetermined cavity in a bone.

Claim 25 (New): A method for implanting an implant in bone tissue or in bone tissue supplemented with bone substitute material, the method comprising the steps of:

providing an implant having an implant surface of which at least a contact part is adapted to come into contact with the bone tissue, wherein said contact part of the implant surface comprises surface regions of a first type and surface regions of a second type that are different from the surface regions of the first type, wherein the surface regions of the second type comprise a material that is liquefiable by mechanical oscillation, and wherein the surface regions of the first type are equipped for a further clinical function that is different from the function of primary stabilization;

positioning the implant on or in the bone tissue;

applying mechanical oscillation to the implant and at the same time pressing the implant against the bone tissue, thereby liquefying at least part of the liquefiable material and pressing the liquefied material into unevenesses and pores of the bone tissue;

re-solidifying the liquefied material to form a connection with the bone tissue for primarily stabilizing the implant in the bone tissue;

wherein the surface regions of the first and second type are dimensioned and arranged in a manner such that the surface regions of the first type remain at least partly free from liquefied material when mechanical oscillation is applied to the implant and the implant is pressed against the bone tissue; and

wherein the surface regions of the second type are equipped and arranged for the further clinical function taking effect on the bone tissue immediately after the step of re-solidifying.

Claim 26 (New): The method according to claim 25, wherein the implant is loaded immediately after the step of re-solidifying.

Claim 27 (New): The method according to claim 25, wherein before the step of positioning, an opening suitable for positioning the implant is produced in the bone tissue.

Claim 28 (New): The method according to claim 27, wherein the bone comprises a cortical part and a cancellous part underneath the cortical part, wherein the opening is produced in the cortical part and wherein the step of applying and pressing comprises advancing the implant into the cancellous part.

Claim 29 (New): The method according to claim 25, wherein the implant is positioned on the bone tissue and the step of pressing comprises pressing the implant in a self cutting manner into the bone tissue.

Claim 30 (New): The method according to claim 25, wherein before the step of positioning, unevenesses of a suitable geometry are produced in the bone tissue, into which unevenesses the liquefied material is to be pressed.

Claim 31 (New): The method according to claim 25, wherein the step of applying and pressing comprises positioning a sonotrode of an ultrasound device on a proximal face of the implant.

Claim 32 (New): The method according to claim 25, wherein the implant has the form of a cavity in the bone tissue and is implanted in this cavity.

Claim 33 (New): The method according to claim 32, wherein the cavity is created by extracting a natural tooth root from a jaw bone.

Claim 34 (New): The method according to claim 25, wherein the step of providing comprises combining two implant parts of two different materials to form the implant.

Claim 35 (New): The method according to claim 25, wherein after the step of re-solidifying a further implant part is fixed on a proximal end of the implant.

Claim 36 (New): The method according to claim 25, wherein the implant is designed for connecting two vertebrae and the step of applying and pressing comprises pushing the implant between the two vertebrae.

Claim 37 (New): A method for implanting an implant in bone tissue or in bone tissue supplemented with bone substitute material, the method comprising the steps of:

providing an implant having an implant surface of which at least a contact part is adapted to come into contact with the bone tissue, wherein said contact part of the implant surface comprises surface regions of a first type and surface regions of a

second type that are different from the surface regions of the first type, wherein the surface regions of the second type comprise openings to an inside cavity of the implant, the inside cavity containing a material which is liquefiable by mechanical oscillation, and wherein the surface regions of the first type are equipped for a further clinical function that is different from the function of primary stabilization;

positioning the implant on or in the bone tissue;

applying mechanical oscillation to the implant and at the same time applying a force to the liquefiable material in the cavity, thereby liquefying at least part of the liquefiable material and pressing the liquefied material through the openings in the surface regions of the second type and into unevenesses and pores of the bone tissue;

re-solidifying the liquefied material to form a connection with the bone tissue for primarily stabilizing the implant in the bone tissue,

wherein the surface regions of the first and second type are dimensioned and arranged in a manner such that the surface regions of the first type remain at least partly free from liquefied material when the mechanical oscillation is applied to the implant and the liquefied material is pressed through the openings; and

wherein the surface regions of the second type are equipped and arranged for the further clinical function taking effect on the bone tissue immediately after the step of re-solidifying.

Claim 38 (New): The method according to claim 37 wherein the implant is loaded immediately after the step of re-solidifying.

Claim 39 (New): The method according to claim 37, wherein before the step of positioning, an opening suitable for positioning the implant is produced in the bone tissue.

Claim 40 (New): The method according to claim 39, wherein the bone comprises a cortical part and a cancellous part underneath the cortical part, wherein the opening is produced in the cortical part and wherein the step of applying and pressing comprises advancing the implant into the cancellous part.

Claim 41 (New): The method according to claim 37, wherein the implant is positioned on the bone tissue and the step of pressing comprises pressing the implant in a self cutting manner into the bone tissue.

Claim 42 (New): The method according to claim 37, wherein before the step of positioning, unevenesses of a suitable geometry are produced in the bone tissue, into which unevenesses the liquefied material is to be pressed.

Claim 43 (New): The method according to claim 37, wherein the step of applying and pressing comprises positioning a sonotrode of an ultrasound device on a proximal face of the implant.

Claim 44 (New): The method according to claim 37, wherein the implant has the form of a cavity in the bone tissue and is implanted in this cavity.

Claim 45 (New): The method according to claim 44, wherein the cavity is created by extracting a natural tooth root from a jaw bone.

Claim 46 (New): The method according to claim 37, wherein the step of providing comprises combining two implant parts of two different materials to form the implant.

Claim 47 (New): The method according to claim 37, wherein after the step of re-solidifying a further implant part is fixed on a proximal end of the implant.

Claim 48 (New): The method according to claim 37, wherein the implant is designed for connecting two vertebrae and the step of applying and pressing comprises pushing the implant between the two vertebrae.